ARTICLE VI. WATER-BASED FIRE PROTECTION SYSTEMS

DIVISION 1. GENERALLY

Sec. 9-95. Scope.

This article shall provide the minimum requirements for the application, design, installation, location, performance, and maintenance of automatic fire sprinkler systems, standpipe and hose systems, pumps, and accessory equipment for supplying water for fire protection.

Sec. 9-96. Purpose.

The purpose of this article is to provide a reasonable degree of protection for life and property from fire through design, installation, testing and maintenance requirements for automatic fire sprinkler systems, standpipe and hose systems, pumps, and accessory equipment for supplying water for fire protection based on sound engineering principles, test data, and field experience.

Sec. 9-97. Definitions.

The definitions contained in this section apply throughout this article and are in addition to any document referred to therein. The definitions are intended to be read in place of any definitions of the same words contained in the publication adopted in Section 9-104.

Bathroom means a room and any connected adjacent spaces of related use, excluding closets, collectively containing a water closet, lavatory, and bathtub or shower.

DIVISION 2. ADMINISTRATION AND ENFORCEMENT

Sec. 9-98. Permits.

(a) Application for a permit shall only be made by an individual, firm, or corporation licensed by the State Fire Marshal's Office for the installation, service, or repair of water-based fire protection systems.

Sec. 9-99. Licensing.

(a) A license shall be obtained from the State Fire Marshal's Office by every individual, firm, or corporation commercially installing, servicing, or repairing water-based fire protection systems.

Secs. 9-100. Impairments.

(a) Impairments. A fire protection system shall be considered to be impaired when the system or portion thereof is taken out of service for any reason.

(1) Where a required fire sprinkler system is impaired for more than ten (10) hours in a twenty-four (24) hour period, the building shall be evacuated, or an approved fire watch shall be provided for all parties left unprotected by the shutdown, or other mitigating measures shall be instituted as approved by the City Fire Marshal until the fire sprinkler system has been returned to service.

(b) Out of Service. A fire protection system shall be considered to be out of service when the system is damaged or impaired to a degree that it is unable to provide the basic level of fire protection it was intended to provide.

(1) Where a required fire sprinkler system is out of service for more than four (4) hours in a twenty-four (24) hour period, the authority having jurisdiction shall be notified, and the building shall be evacuated, or an approved fire watch shall be provided for all parties left unprotected by the shutdown, or other mitigating measures shall be instituted as approved by the City Fire Marshal until the fire sprinkler system has been returned to service.

Secs. 9-101 – 9-103. Reserved.

DIVISION 3. TECHNICAL STANDARDS

Sec. 9-104. Adopted.

The NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition; NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height, 2010 Edition; NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, 2010 Edition; NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 2010 Edition; NFPA 20, Standard for the Installation of Stationary Pump for Fire Protection, 2010 Edition; and NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 2011 Edition, as issued by the National Fire Protection Association, are hereby adopted by reference, except as amended by Section 9-105, Section 9-106, Section 9-107, Section 9-108, Section 9-109, and Section 9-110 of this Chapter. One (1) copy of such publication, as adopted, shall be maintained by the Inspection Services Division in the City of Rockville City Hall and made available for inspection by the public during regular office hours. Any amendment or change in such code promulgated by the NFPA shall not become part of this article until the modifications have been duly adopted by ordinance.

Sec. 9-105. Same-Amendments, NFPA 13.

Subsection 7.6.1 of the NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, is amended by adding paragraph 7.6.1.6 to read as follows:

7.6.1.6 Dwelling Units. Antifreeze shall not be permitted to be used within the dwelling unit portions of sprinkler systems.

Subparagraph 8.15.10.3 of the NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, is deleted.

Subparagraph 8.16.1.1.1 of the NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, is amended by adding the Sub-subparagraph 8.16.1.1.1.4 to read as follows:

8.16.1.1.1.4 When a sprinkler system serves more than one floor, each floor must be consistently and separately valved by a listed and approved indicating control valve.

8.16.1.1.1.5 Where a sprinkler system is required to activate a building fire alarm system, the sprinkler system shall have a separate and distinct water flow detecting device for each floor and zone.

8.16.1.1.1.6 The provisions of 8.16.1.1.1.4 and 8.16.1.1.1.5 shall not apply to the following:

(1) In buildings not exceeding three floors and 3000 square feet per floor.
(2) Unoccupied and unused attics may be zoned with the level below.
(3) Mezzanines not exceeding 3000 square feet in area.
(4) Detention and correctional facilities.

Subparagraph 8.16.4.1.1 of the NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, is amended by adding the Sub-subparagraph 8.16.4.1.1.1 to read as follows:

8.16.4.1.1.1 Insulation installed for the protection of sprinkler systems shall be uncompacted batt insulation having a minimum R-value of thirty (30).

Sub-subparagraph 8.17.2.4.5 of the NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, is amended to read as follows:

8.17.2.4.5 Where a fire department connection services only a portion of a building, a permanent weather resistant sign shall be attached indicating the portions of the building served.

Sub-subparagraph 8.17.2.4.6 of the NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, is deleted and replaced with the following to read as follows:

8.17.2.4.6 Unless otherwise directed by the AHJ, the installation of fire department connections shall comply with the following:

(a) Shall be on the street side of the building, and shall be located and arranged so that hose lines can be readily and conveniently attached to the inlets without interference from any nearby objects, including buildings, fences, posts, or other fire department

connections;

(b) Shall be located within 100 ft. (30.48 m) from a fire hydrant, and between 18 and 48 in. (457.2 mm and 1.22 m) from grade to the centerline of the inlets;

(c) The number of 2 ½ inlets shall be:

System Demand (gpm)	No. of Inlets
Up to 749	2
750 to 999	3
1000 and above	4

(d) Multiple inlets for the same building shall be interconnected.

Chapter 23 of the NFPA 13, Standard for the Installation of Sprinkler Systems, 2010 Edition, is amended by adding the following Section, Subsections, and Annex Section to read as follows:

23.3* Water Supply Safety Factors.

23.3.1 Calculations for new systems, or new portions of existing systems, must be designed with a safety factor of not less than 20%.

23.3.2 The minimum safety factor may be reduced to 10% for owner occupied buildings.

23.3.3 Lower safety factors may be used at the discretion of the authority having jurisdiction.

A.23.3 For sprinkler systems without a fire pump, this safety is based on pressure demand at the supply point. For systems designed with a fire pump, this safety is based on both demand pressure and demand flow at the pump discharge. When designing these systems, all options, except gridded piping arrangements, should be explored to prevent adding a fire pump.

Sec. 9-106. Same-Amendments, NFPA 13D.

Paragraph 3.3.9.1 of the NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, 2010 Edition, is deleted.

Subsection 4.1.4 of the NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, 2010 Edition, is deleted.

Section 6.1 of the NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, 2010 Edition, is amended by adding the following Subsection, Paragraphs, and Annex Section to read as follows:

6.1.5* Water Supply Safety Factors.

6.1.5.1 Calculations for new systems, or new portions of existing systems, must be designed with a 10% safety factor.

6.1.5.2 Lower safety factors may be used at the discretion of the authority having jurisdiction.

A.6.1.5 For sprinkler systems without a fire pump, this safety is based on pressure demand at the supply point. For systems designed with a fire pump, this safety is based on both demand pressure and demand flow at the pump discharge. When designing these systems, all options, except gridded piping arrangements, should be explored to prevent adding a fire pump.

Subsection 7.1.2 of the NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, 2010 Edition, is deleted.

Subsection 8.3.1 of the NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, 2010 Edition, is amended by adding the Subparagraph 8.3.1.1 to read as follows:

8.3.1.1 Insulation installed for the protection of wet pipe systems shall be uncompacted batt insulation having a minimum R-value of thirty (30).

Subsection 8.3.2 (2) of the NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, 2010 Edition, is deleted.

Subsection 8.3.3 of the NFPA 13D, Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes, 2010 Edition, is deleted and amended to read as follows:

8.3.3 Antifreeze Systems. Antifreeze shall not be permitted in sprinkler systems.

Sec. 9-107. Same-Amendments, NFPA 13R.

Section 3.3 of the NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height, 2010 Edition, is amended by adding the following Subsections, Paragraphs, and Annex Section to read as follows:

3.3.15 Stories in Height. The story count starting with the level of exit discharge and ending with the highest occupiable story containing the occupancy considered.

3.3.16 Story. The portion of a building located between the upper surface of a floor and the upper surface of the floor or roof next above.

3.3.16.1 Occupiable Story. A story occupied by people on a regular basis.

A.3.3.16.1 Occupiable Story. Stories used exclusively for mechanical equipment rooms, elevator penthouses, and similar spaces are not occupiable stories.

Chapter 4 of the NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height, 2010 Edition, is amended by adding Section 4.7 to read as follows:

4.7 Antifreeze Systems. Antifreeze shall not be permitted within the dwelling unit portions of sprinkler systems.

Subsection 5.4.1 of the NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height, 2010 Edition, is amended by adding the Subparagraph 5.4.1.1 to read as follows:

5.4.1.1 Insulation installed for the protection of wet pipe systems shall be uncompacted batt insulation having a minimum R-value of thirty (30).

Subsection 5.4.3 of the NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height, 2010 Edition, is amended to read as follows:

5.4.3 Antifreeze shall not be permitted within the dwelling unit portions of sprinkler systems.

Chapter 9 of the NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height, 2010 Edition, is amended by adding the following Section, Subsections, and Annex Section to read as follows:

9.7* Water Supply Safety Factors.

9.7.1 Calculations for new systems, or new portions of existing systems, must be designed with a 10% safety factor.

9.7.2 Lower safety factors may be used at the discretion of the authority having jurisdiction.

A.9.7.1 For sprinkler systems without a fire pump, this safety is based on pressure demand at the supply point. For systems designed with a fire pump, this safety is based on both demand pressure and demand flow at the pump discharge. When designing these systems, all options, except gridded piping arrangements, should be explored to prevent adding a fire pump.

Subsection 6.11.1 of the NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height, 2010 Edition, is amended to read:

6.11.1 In all apartment buildings, not less than a single 2 ½ in. fire department connection shall be provided.

Subsection 6.11.2 of the NFPA 13R, Standard for the Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height, 2010 Edition, is replaced to read:

6.11.2 The fire department connection shall be located on a street front, and be 18 to 48 in. (457.2 mm to 1.22 m) from the centerline of the inlet to finish grade.

Sec. 9-108. Same-Amendments, NFPA 14.

Paragraph 4.7.3 of the NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 2010 Edition, is amended as follows:

4.7.3 Each fire hose valve shall be provided with 2 ½ in. valved hose connections, 2 ½ in. to 1 ½ in. reducers, caps, and chains.

Paragraph 6.4.5.1 of the NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 2010 Edition, is amended by adding Subparagraph 6.4.5.1.2 to read as follows:

6.4.5.1.2 Unless otherwise directed by the AHJ, the installation of fire department connections shall comply with the following:

(a) the number of 2 ½ inlets shall be:

System Demand (gpm)	No. of Inlets
Up to 749	2
750 to 999	3
1000 and above	4

(b) multiple inlets for the same building shall be interconnected.

Subparagraph 6.4.5.1.1 of the NFPA14, Standard for the Installation of Standpipe and Hose Systems, 2010 Edition, is amended to read as follows:

6.4.5.1.1 Fire department connections shall be on the street side of the building, and shall be located and arranged so that hose lines can be readily and conveniently attached to the inlets without interference from any nearby objects, including buildings, fences, posts, or other fire department connections;

Subparagraph 6.4.5.3 of the NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 2010 Edition, is amended to read as follows:

6.4.5.3 Where a fire department connection services multiple buildings, structures, or locations, or services, only a portion of a building, a sign shall be provided indicating the buildings, structures, locations, or portions of the building served.

Subsection 7.3.2 (1) of the NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 2010 Edition, is amended to read as follows:

(1) At the highest intermediate landing between floor levels or each main landing in every required exit stairway.

Paragraph 7.3.2.2 of the NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 2010 Edition, is amended by adding Subparagraph 7.3.2.2.1 to read as follows:

7.3.2.2.1 Where hose connections are provided on the main floor landings of exit stairways, the travel distance required in Paragraph 7.3.2.2 of this Code shall be measured between the most remote portion of the floor and the hose connection located on the floor below or the floor above, whichever is further.

Subsection 7.8.1 of the NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 2010 Edition, is amended by adding the following Paragraphs, Subparagraph, and Annex Section to read as follows:

7.8.1.2 Where fire pumps are necessary to produce the required residual pressures for standpipe systems in high rise buildings, the pumps and piping shall be sized to provide for the demand of the hydraulically most remote hose station, or the sprinkler system demand, whichever is greater.

7.8.1.2.1 Standpipe systems shall be sized to provide the required flow and pressure for all hose stations required to be flowing, when supplied by 150 psi at 1000 gpm at the fire department connection(s).

7.8.1.3 Standpipe systems in buildings that are not high rises, and dry standpipe systems with no automatic water supplies, may be designed to obtain the required flows and pressures, when supplied by the fire department with 1000 gpm at 150 psi at the fire department connection(s).

Subsection 8.2.2 of the NFPA 14, Standard for the Installation of Standpipe and Hose Systems, 2010 Edition, is amended by adding Paragraph 8.2.2.1 to read as follows:

8.2.2.1 Where fire pumps are necessary to produce the required residual pressures for standpipe systems in high rise buildings, separate sets of calculations shall be provided to demonstrate the demand of the hydraulically most remote hose station and the demand of the sprinkler system.

Sec. 9-109. Same-Amendments, NFPA 20.

Sub-subparagraph 4.12.1.1.3 of the NFPA 20, Standard for the Installation of Stationary Fire Pumps for Fire Protection, 2010 Edition, is amended to read as follows:

> **4.12.1.1.3** The location of and access to the fire pump room shall be approved by the authority having jurisdiction.

Sub-subparagraph 4.12.1.1 of the NFPA 20, Standard for the Installation of Stationary Fire Pumps for Fire Protection, 2010 Edition, is amended by adding Sub-subparagraph 4.12.1.1.6 to read as follows:

> **4.12.1.1.6** Rooms containing fire pumps shall be a minimum of 100 sq. ft. (9.29 m^2) in area, with the smallest dimension not less than 8 ft. (2.44 m). If equipment additional to the backflow preventer, fire pump and fire pump controller is proposed to be installed, the authority having jurisdiction may require additional area be provided.

Sec. 9-110. Same-Amendments, NFPA 25. (No Amendments)

Secs. 9-111 – 9-112. Reserved.